RES4Africa Foundation
Knowledge Platform

A review of electricity policy and regulatory frameworks in Africa

RES4Africa Foundation and United Nations Economic Commission for Africa (UNECA)
African power systems are in need of substantial investment

Access to electricity
- ~590 million people in sub-Saharan Africa lack access to electricity
- Varied regional picture: South Africa (85% with access) vs South Sudan (7%)

Electricity demand
- Today, Africa’s electricity demand represents 2% of global electricity demand
- By 2040, electricity demand in Africa is expected to quadruple

Investments
- Estimates of investment requirements in the energy sector of Africa vary; however, most are significant:
  - €340 billion by 2030 (World Energy Network)
  - $90 billion per annum until 2030 (AfDB)
  - For power only $100 billion between 2026-30 (IEA)
So far, finance was mainly from public & multilateral sources

So far, energy infrastructure finance has mainly come from public & multilateral sources

Total energy financing by source in Million $

Finance for energy infrastructure is increasing but the role of the private sector remains marginal

Source: ICA • Created with Datawrapper
Closing the investment gap requires a much bigger role for the private sector

The regulatory frameworks of many African countries do not allow private participation in certain segments of the electricity value chain.

Source: Africa Energy Outlook 2019 (IEA, 2020)
Private investors look for enabling environments

While having an immense market potential, Africa still presents some challenges

- RE investments do not necessarily go where there is the most wind or sun, but often where the best enabling environment is provided

- An enabling environment relies on several factors, some of which Africa has yet to ensure

- Population growth
- Demand growth
- Cost-competitiveness of RES
- Adequate de-risking instruments
- Fast urbanisation
- RES potential
- Sound regulatory framework
- Cross-sectoral partnerships

✔

Fast urbanisation

Demand growth

Cost-competitiveness of RES

Adequate de-risking instruments

Population growth

Cross-sectoral partnerships

Sound regulatory framework
Comprehensive risk assessment drive investment decisions

- Natural force majeure
- Social acceptance
- Environmental impact assessment procedure

- Financing availability
- Tax regime
- Know-how of local financial intermediaries
- Inflation & currency risk

- Local content requirements
- Land rights
- Adequacy of local technical skills
- Logistics, security, safety risks
- Permitting/licensing
- Construction and O&M flaws

27 risks grouped in 5 areas

- Political risk
- Dispute resolution
- RES procurement mechanisms
- Transparency & fairness of market mechanisms
- Starting a business
- Legal & regulatory risk
- Grid access rules
- Property/concession rights
- IPP market access rules

- Counterparty/sovereign risk
- Breach of contract
- Capital transfer & convertibility
- Curtailment risk

Source: Investor survey (World Bank 2020)
Perceived policy and regulatory risks are a priority

Investors assign the greatest importance to policy & regulatory risks when they scope for new geographies to invest in.

Source: Attracting Private Solutions and Participation in the Power Sector in Sub-Saharan Africa (World Bank, 2020)
Policy and regulatory risks are complex and diverse

Study conducted in 6 SSA countries
- Côte d’Ivoire
- Senegal
- Kenya
- Ghana
- Ethiopia
- Mozambique

116 survey participants
- 70% private sector
- 30% public sector

Industry: 34%
Finance: 14%
Professional services: 22%

Source: Investor Survey on Sub Saharan Africa – A survey on the risks to renewable energy investments (RES4Africa, 2021)
Policy and regulatory risks are complex and diverse

### MAIN RISK CATEGORIES

<table>
<thead>
<tr>
<th>Country Context Risks</th>
<th>Power Sector Context Risks</th>
<th>Policy and Regulatory Frameworks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Capture the wider governance and political environment, the macroeconomic framework, general access to international finance...</td>
<td>Factors related to the wider sector context, including track record of private solutions, growth of demand and supply, and private investors’ own track record in the sector</td>
<td>Policy and regulatory risk factors, including the ease of market entry and exit, the clarity of investment priorities, and the certainty of cash flows</td>
</tr>
</tbody>
</table>

### Policy & Regulatory Risk Factors

<table>
<thead>
<tr>
<th>Ease of Market Entry</th>
<th>Clarity of Investment Priorities</th>
<th>Certainty of Cash Flow</th>
<th>Operational Stability</th>
</tr>
</thead>
<tbody>
<tr>
<td>Risks related to licensing, infrastructure procurement and tendering, and the legal framework determining investors’ ability to enter the market</td>
<td>Risks related to government plans for electrification, generation and network expansion and required technical standards</td>
<td>Risks related to cost recovery and investment returns, ability to enforce payment, and government incentives &amp; support schemes</td>
<td>Risks related to technical aspects as for infrastructure system integration, access to networks, dispatch, etc.</td>
</tr>
</tbody>
</table>

*and potentially add...*
They can be found along all the entire project life-cycle and affect the investment process along the way.

**Market governance**
- How is the market structured?

**Project governance**
- Under which regime shall the asset operate?

**Planning**
- How is the asset development plan structured?

**Tariffs and Incentives**
- Do current tariffs and potential incentives ensure viability?

**Permits**
- How to get the necessary permits and authorizations?

**System integration**
- Is the correct implementation & efficient integration of the asset in the system ensured?

**Investment decision**
- Availability of business models and market potential
- Agreement with the Authority for energy sale, pricing and metering system, tariffs
- Procedures for project official approval and licenses to operate
- Identification of strategies for funding (direct funding, credit, incentives)
- Plant construction, testing phase, start-up, operation and maintenance

**Market scouting**
- Energy off-taking
- Licenses issuing
- Financing
- Construction, O&M
Effective policy criteria for private sector participation

Power Sector Structure & Governance
- Policies, laws and regulations defining energy policy strategic priorities, and regulating market entry, infrastructure planning, sector governance, market structures, and infrastructure procurement

Sector Economics
- Laws and regulations that ensure the economic viability of electricity infrastructure investments, as well as a fair competition among market operators

Sector Maturity
- Technical regulations meant to ensure a correct implementation and an efficient integration and management of electricity infrastructure

Policy & Regulatory Effectiveness for Private Sector Participation

- Clarity
- Predictability
- Transparency
- Accountability

Openness

Attractiveness

Readiness
R.O.A.R. approach assesses the effectiveness of electricity sector regulation highlighting gaps

- A comprehensive analytical framework to assess key aspects of policies and regulations
- Developed by R4A and UNECA with the support of international policy and regulatory experts
- Implemented to assess policy and regulatory frameworks in 16 African countries

**Openness**

To what degree the market is accessible and evolved?

Sector structure & governance

**Attractiveness**

Could the investment be profitable?

Sector economics

**Readiness**

Could the asset be integrated and operated within electricity system?

Sector maturity
Openness dimension

The degree of market openness is the first element evaluated by investors when scoping for investment opportunities.
Regulatory openness of electricity markets in Africa

Continental Average Score by Topic – Openness

- Good definition and visibility of energy policy targets (i.e. access, RE-development)
- Increasing independence of sector governance
- Dominance of vertically integrated monopolies or insufficient unbundling
- Limited ability of private entities to participate in transmission & distribution

0 = lack of regulatory preparedness
3 = full regulatory preparedness
Analysis of regulatory Openness in the Generation segment

- Electricity Sector Strategy
- System Planning
- Power Sector Governance
- Power Sector Framework
- Private Sector Participation Models
- Procurement Process
- Power Sector Competition
- Generation Off-taking Options

- Average
- Min
- Max
Analysis of regulatory Openness in the Transmission segment
Analysis of the regulatory Openness in the Off-grid segment

- Electricity Sector Strategy
- System Planning
- Power Sector Framework
- Power Sector Competition
- Private Sector Participation Models
- Procurement Process
- Power Sector Governance

![Graph showing analysis of regulatory openness in off-grid segment](image-url)
Establish a level playing field for market players

10/16 countries * are still characterized by vertically integrated utilities, monopoly of certain services and constrained private sector role

- Independent transmission system operator
- Legal right to access to electricity networks for all potential users
- Primary legislation to define market participants obligations and rights to operate
- Clear legal framework for electricity infrastructure procurement

*Countries scoring ≤1.5 in our regulatory review
The attractiveness of market conditions and a market’s ability to ensure the long-term financial viability of assets is the second dimension considered by investors when evaluating a new market.
Regulatory attractiveness of electricity markets in Africa

- Advanced contract standardisation for generation investments (i.e. PPAs)
- Insufficient contract regulation to determine rights and obligations of network operators
- Lack of transparency of tariff methodologies and predictability about their review periods
- Incentives only available on a project-by-project basis

**0** = lack of regulatory preparedness

**3** = full regulatory preparedness
Analysis of regulatory Attractiveness: Generation Segment

- Contracts regulation: Min 0, Max 2.4, Average 3
- Economic regulation: Min 0.5, Max 1.8, Average 3
- Incentives: Min 0, Max 0.8, Average 2
- Indirect incentives: Min 0.5, Max 2.1, Average 3
- Credit Enhancement: Min 0, Max 1.7, Average 2.5
Define incentives to Promote Electrification & Decarbonization

15/16 countries lack comprehensive regulatory frameworks to support renewable energy deployment*

Some of the analysed countries have adopted best practices such as:

- Financial incentives designed to align with policy targets & market realities
- Competitive processes for granting financial incentives
- Performance-based incentive mechanisms for utilities

*Countries scoring ≤1.5 in our regulatory review
Analysis of Regulatory Attractiveness: Transmission Segment

- Contracts regulation: Average 1.4, Min 0, Max 3
- Economic regulation: Average 1.8, Min 0, Max 3
- Credit Enhancement: Average 1.2, Min 0, Max 2.5
Establish effective Contracts Administration

7/16 countries* demonstrate a lack of transparency regarding the terms of key sector contracts (Transmission Service Agreements, concessions) and present possible red tape in contract negotiation.

- Clarity on rights and obligations, performance requirements & remuneration
- Transparency on contract review and approval process
- National regulator involved in the approval of contractual terms

*Countries scoring ≤1.5 in our regulatory review
Analysis of Regulatory Attractiveness: Distribution Segment

Contracts regulation
- Average: 0
- Min: 0
- Max: 1.8
- Scale: 3

Economic regulation
- Average: 0
- Min: 0
- Max: 1.7
- Scale: 3

Credit Enhancement
- Average: 0
- Min: 0
- Max: 1.2
- Scale: 3

Legend:
- Average
- Min
- Max
Analysis of Regulatory Attractiveness: Off-grid Segment

- Contracts regulation
  - Average: 0
  - Min: 1.3
  - Max: 3

- Economic regulation
  - Average: 0
  - Min: 1.2
  - Max: 3

- Credit Enhancement
  - Average: 0.5
  - Min: 1.3
  - Max: 3

- Indirect incentives
  - Average: 0
  - Min: 2.4
  - Max: 3
Create Conditions for Long-term Financial Viability of the Sector

Economic regulation

7/16 countries* lack transparent electricity tariff regulation

- Effective cost recovery as a core objective of tariff policy
- Detailed and transparent tariff methodologies and tariff setting process
- Frequency of tariff review and updates defined by law
- Dedicated tariff policies for mini-grids

*Countries scoring ≤1.5 in our regulatory review
Readiness Dimension

Authorisations & Permits
Land access, environmental permits and one-stop-shop

System Planning
Network Development Plan

Grid Code
Access to network, system operation rules & ancillary services

Mini-grid Integration
Regulation for off-grid arrival

System Quality and Security Standards
Quality and security standards for networks

Grid Access
Grid connection and operation agreements

Access to Data
Public availability of data
Regulatory readiness of electricity markets in Africa

Countries scoring ≤1.5 in our regulatory review

- Improved regulation that coordinates and supervises electricity system planning
- General improvement of technical regulation & grid access even if wide differences persist across countries
- Lack of regulation for off-grid system integration
- Improving transparency on market data but still limited availability on system reliability and service quality

Continental Average Score by Topic – Readiness

0 = lack of regulatory preparedness
3 = full regulatory preparedness

*Countries scoring ≤1.5 in our regulatory review
Analysis of Regulatory Readiness: Generation Segment

- **Authorisations & Permits**: Min 2, Average 2.5, Max 3
- **System Planning**: Min 0, Average 2.4, Max 3
- **Grid Code**: Min 0, Average 1.9, Max 3
- **Grid Access**: Min 0, Average 1.7, Max 3
- **System Quality and Security Standards**: Min 0, Average 2.5, Max 3
- **Access to Data**: Min 1, Average 2.5, Max 3
Establish system development and operation rules

6/16 countries* lack or have incomplete grid code regulation and lack transparent rules for market operation and dispatch.

2/3 of the reviewed countries shows good practices in dealing with grid code regulation by:

- Mandate responsible authority for grid code development
- Adopt and enforce, connection, operation and planning sub-codes
- Appropriate requirements for VRE plants integration
- Monitor compliance with grid connection codes

*Countries scoring ≤1.5 in our regulatory review
Analysis of Regulatory Readiness: Transmission Segment

- Authorisations & Permits: Min 2, Average 2.3, Max 2.5
- Grid Code: Min 0, Average 2.4, Max 3
- Grid Access: Min 0, Average 1.7, Max 3
- System Quality and Security Standards: Min 0, Average 2.5, Max 3
- Access to Data: Min 1, Average 2.4, Max 3
Analysis of Regulatory Readiness: Distribution Segment

- **Authorisations & Permits**: 2.4
- **Grid Code**: 2.2
- **Grid Access**: 1.7
- **System Quality and Security Standards**: 2.5
- **Access to Data**: 2.4
Ensure open access and integration to the grid system

Grid access is a challenge in 8/16 countries* due to lack of clarity on responsibilities and cost allocation related to grid connection and on tariff conditions for access and usage of the grid.

40% of the countries adopted exhaustive legislation concerning grid access based on:

- Non-discriminatory third-party access to networks
- Streamlined grid connection process
- Standardised system access contracts
- Consultative transmission network charge setting

*Countries scoring ≤1.5 in our regulatory review
Analysis of Regulatory Readiness: Off-Grid Segment

Authorisations & Permits
- Min: 1.5
- Average: 2.4
- Max: 3

Access to Data
- Max: 3

Off-grid System Integration
- Min: 0
- Average: 1.1
- Max: 3

System Quality and Security Standards
- Min: 0
- Average: 1.5
- Max: 3
**Analysis of Regulatory Readiness: Off-Grid Segment**

10/14 countries lack regulation for off-grid system integration, thus increasing the risk of stranded assets and the uncertainty around off-grid investments*

Some pioneer countries adopted legislation offering long-term integration options for off-grid systems:

- Comprehensive master plan for electricity infrastructure development
- Define technical standards for mini-grid integration with main network
- Establish commercial models for mini-grid operators in case of grid arrival

*Countries scoring ≤1.5 in our regulatory review
ROAR supports the development of a blueprint for advancing policy & regulatory reform towards increased power sector participation in electricity infrastructure.